



HOLOCENE DEPOSITS Stream alluvium - Sand, silt, and minor amounts of gravel deposited on flood plains of modern streams.

Stream terraces - Flat alluvial benches situated above modern flood plains of streams. Materials forming the depositional terrace include gravel, sand, silt, and clay. Step-like morphology is created by downcutting of the stream through previously deposited material, of glacial or postglacial origin and age.

Wetland, swamp - Peat and fine-grained inorganic sediment. Poorly drained area Hws with standing water common. Hwsp indicates swamps which are likely to include peat deposits that equal or exceed 1.5 meters in thickness.

Wetland, freshwater marsh - Peat and fine-grained inorganic sediment. Poorly

Hwfm drained grassland with standing water common. Hwfmp indicates marshes that are likely to include peat deposits that equal or exceed 1.5 meters in thickness.

PLEISTOCENE DEPOSITS

Marine nearshore deposits - Sand and gravel deposits formed as beaches, and shallow marine sand bodies formed during marine submergence and regression.

Presumpscot Formation - Fine-grained marine mud (silt and clay with local sandy beds and lenses) locally with marine fossils and dropstones deposited in deeper quieter water during the marine submergence of the coastal lowland.

Marine fan - Layered gravel and sand deposited on the seafloor in a wedge or mound form at the glacier margin during marine submergence.

Marine delta - Sorted and stratified sand and gravel deposited in the late-glacial sea, with flat top graded to ocean surface.

Marine ice-contact delta - Ice-contact delta composed primarily of sorted and stratified sand and gravel. Deposit was graded to surface of late-glacial sea and is distinguished by flat top and foreset and topset beds.

Esker - Gravel and sand deposited in an ice tunnel by subglacial meltwater stream.

gravel deposited at the margin of the late Wisconsinan ice sheet.

End moraine complex - Area of end moraines and associated glaciomarine sediments (submarine fan and sea-floor deposits). Composed of till, sand, and Till - Poorly sorted mixture of gravel, sand, silt, and clay deposited directly by the action of glacier ice.

Undifferentiated sediments - Pleistocene surficial sediments of uncertain origin.

Bedrock - Gray dots indicate individual outcrops of ledge exposed at the surface.

of surficial sediments. Artificial fill - Mixture of till, gravel, sand, clay, and artificial materials transported

and dumped to form elevated sections of roadways, etc.

Horizontal ruled pattern indicates areas where bedrock is covered by a thin veneer

Contact - Indicates boundary between adjacent map units, dashed where approximate.

Glacial striation or groove - Arrow shows direction of former ice movement. Dot marks point of observation.

End moraine - Ridge of till, sand, and gravel deposited and/or deformed by glacier

Ice margin position - Line shows approximate position of ice margin during glacial retreat for major ice-margin positions. Dashed where approximate.

Glacially streamlined hill - Symbol shows trend of long axis, which is parallel to former ice-flow direction.

Marine fossil locality - Indicates site where marine fossils were located. Sites

where radiocarbon age estimates were obtained also show radiocarbon age

and others, 1989).

Glaciomarine delta - Elevation of contact between topset and foreset beds in ▲350 glaciomarine delta, which indicates former position of sea level (from Thompson

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to

human activity, such as fill or other land-modifying features. The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar

changes for long-term planning efforts, such as coastal development or waste disposal. Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

- 1. Retelle, M. J., 1999, Surficial geology of the Cumberland Center 7.5-minute quadrangle, Cumberland County, Maine: Maine Geological Survey, Open-File Report 99-112, 6 p.
- 2. Retelle, M. J., 1999, Surficial materials of the Cumberland Center quadrangle, Maine: Maine Geological Survey, Open-File Map 99-64.
- 3. Neil, C. D., 1999, Significant sand and gravel aquifers of the Cumberland Center quadrangle, Maine: Maine Geological Survey, Open-File Map 99-27.
- 4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print) 5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine
- Geological Survey, scale 1:500,000. 6. Thompson, W. B., Crossen, K. J., Borns, H. W., Jr., and Andersen, B. G., 1989, Glaciomarine deltas of Maine and their relation to late Pleistocene-Holocene crustal movements, in Anderson, W. A., and Borns, H. W., Jr. (eds.), Neotectonics of Maine: Maine Geological Survey, Bulletin 40, p. 43-67.